

Quiz #7

Monday, November 7 2016

Duration: 20 min

NAME: _____

Please write clearly and properly. Always explain your answers.

Problem	Grade
1	
2	
3	
Total	

Problem 1 (~ 2 points.).

Let z be a complex number written $z = a + ib$ in algebraic form. Find the algebraic form of $\sin(z)$ (in terms of a and b).

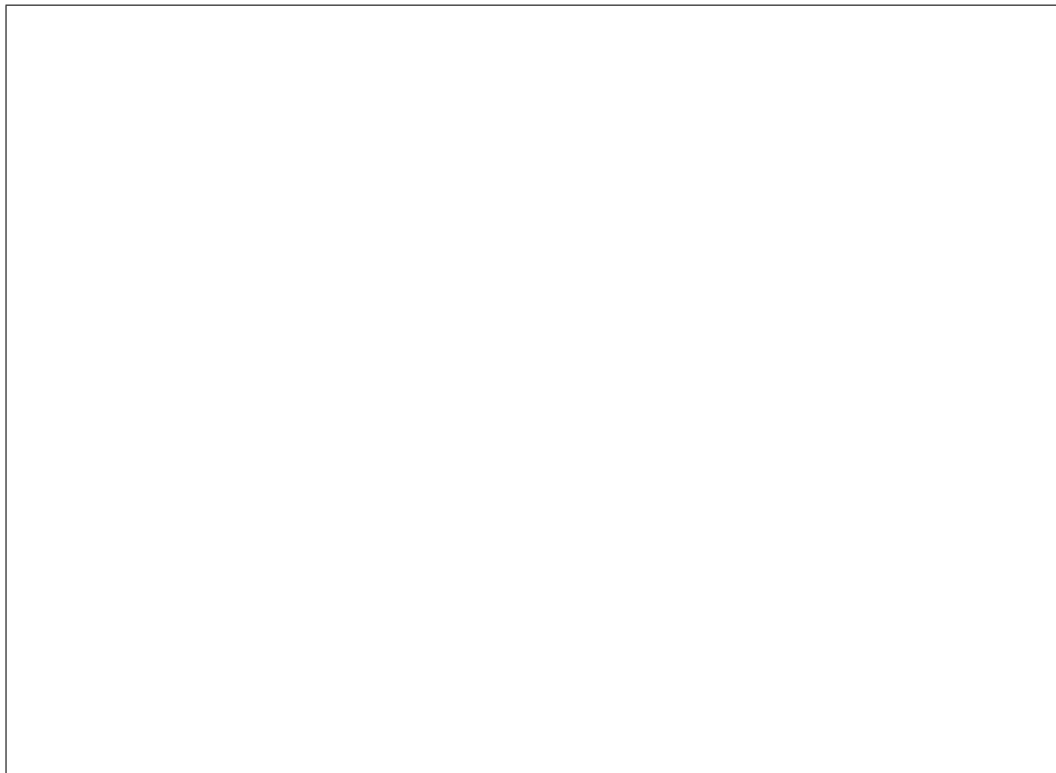


Problem 2 (~ 2 points.).

Consider the set $a \subseteq \mathbb{C}^*$ defined by:

$$A = \{z \in \mathbb{C}^* : \frac{\pi}{4} \leq \text{Arg}(z) \leq \frac{3\pi}{4}\}.$$

Does there exist a branch of the complex logarithm on $\mathbb{C} - A$?



Problem 3 (~ 5 points.).

Recall that Log denotes the principal branch of the complex logarithm.

(1) What is the domain of definition of Log ? Is it a holomorphic function?



(2) Find the values $\text{Log}(-4i)$ and $\text{Log}(e^{5i\pi/3})$.



(3) Find the principal values of $(-4i)^{2i}$ and $(3\pi)^{e^{5i\pi/3}}$.

